Reviewer's report

Title: The dynamics of nasopharyngeal streptococcus pneumoniae carriage among rural Gambian mother-infant pairs

Version: 1 Date: 1 February 2010

Reviewer: Helen Baxendale

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Minor Essential Revisions:

Abstract:
Text needs clarification:
1. The distribution of the number of serotypes ever carried by an infant was significantly under-dispersed relative to that expected had the serotypes assorted independently. This was not true for mothers.
2. While the odds of an infant ever carrying a serotype given that the mother ever carried that serotype was 9-fold greater than if she did not,

Methods:
1. what was the original vitamin A study designed to evaluate? Check ref 14.
2. if only a single colony was used for serotyping, how did the authors evaluate whether co-colonisation with multiple serotypes was present?
3. The serotypes included in the 13 valent vaccine should be listed.
4. Is there any evidence to validate that the assumption of independence of serotype distribution? (p8)

Results:
Figures and tables very clear and comprehensive;

Discussion:
Paper by Gratten et al 1986 should be referenced as looks at Hib and Pnc colonization in mother-neonate pairs and patterns appear to be similar to this manuscript.
P13: Four of these are vaccine serotypes included in the 7-valent conjugate vaccine forming 92.3% of the vaccine serotypes ever carried by the infants. It would be helpful to the reader if the serotypes were actually listed and make it easier for the reader to cross reference with Table 1.
P13: what % is covered by the 7V vaccine?

DISCUSSION:

p14: the possibility of a technical issue accounting for serotype bias has not been addressed.

P14: Studies have shown that mounting anticapsular and weak antiprotein antibody response, and naturally induced anticapsular IgG can prevent carriage [36, 37]. This is incorrect, in humans there is a temporal association between the development of anti-capsular Ig and reduced carriage however this is not proven to be causal. This may seem pedantic but murine data suggests naturally generated anti-capsular Ig may have little role in preventing carriage.

P14: discussing the issue of regionality and colonization load in terms of serotype replacement and lasting vaccine efficacy is pertinent to this paper and not addressed in the discussion.

P14: cross reference lipsitch 2005 in terms of epidemiologic data suggesting non-serotype specific Ab may be contributing to immunity to Pnc and reduction in all serotype carriage.

P16: We note, however, that if the lifespan of colonies is heterogeneity the marginal distribution of survival times will no longer be exponential and estimates of half-life may be less meaningful. ? heterogeneous;

Also: as raised above: issue of co-colonisation not addressed.

P16: 'more than 90% of infant carriage is derived from sources other than the mother.' : caveat this with probably: the swab frequency issue may create an error in interpretation here.

Specific questions:

1. Is question posed by the authors well defined? Yes
2. Are the methods appropriate and well described? Yes
3. Are the data sound? Yes
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes
5. Are the discussion and conclusions well balanced and adequately supported by the data? Yes
6. Are limitations of the work clearly stated? Not completely.
7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes
8. Do the title and abstract accurately convey what has been found? Yes
9. Is the writing acceptable? Yes